

Fig. 1

- (11) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (81) output device
- (82) output device
- (151) switch
- (C) command signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (s1) response signal
- (s2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) frequency characteristic detection result
- (f2) frequency characteristic detection result

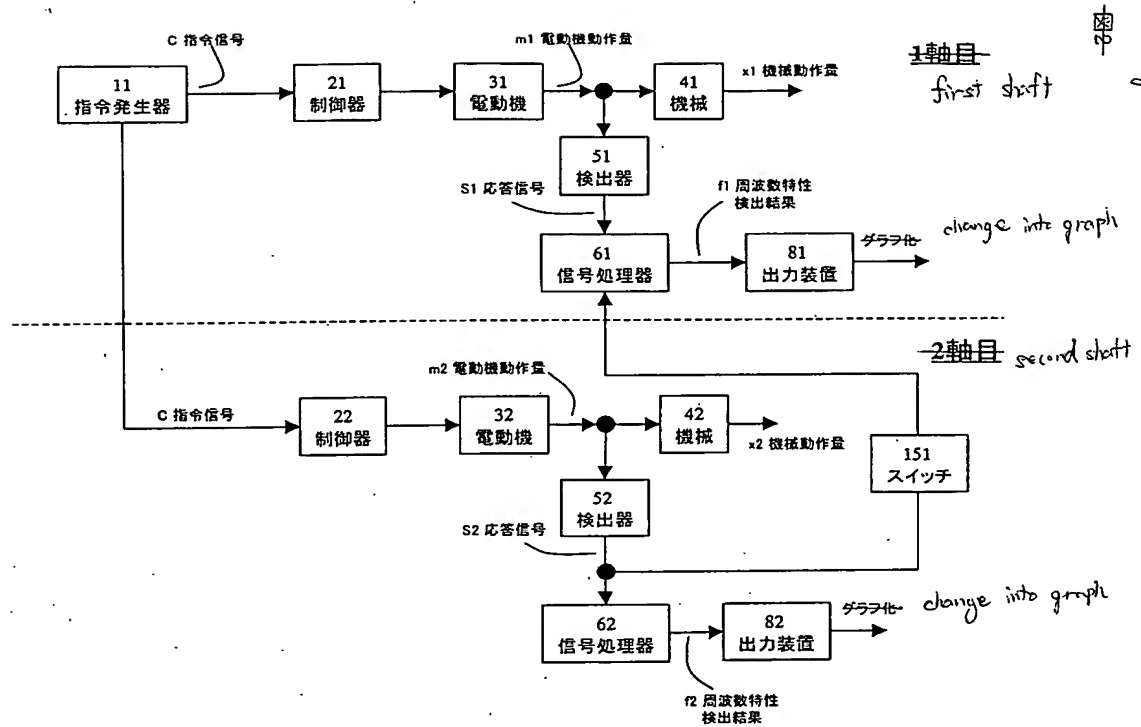


Fig. 2

(11) command generator  
 (21) controller  
 (22) controller  
 (31) electric motor  
 (32) electric motor  
 (41) machine  
 (42) machine  
 (51) detector  
 (52) detector  
 (61) signal processor  
 (62) signal processor  
 (81) output device  
 (82) output device  
 (151) switch  
 (C) command signal  
 (C) command signal  
 (m1) electric motor operating amount  
 (m2) electric motor operating amount  
 (S1) response signal  
 (S2) response signal  
 (x1) machine operating amount  
 (x2) machine operating amount  
 (f1) frequency characteristic detection result  
 (f2) frequency characteristic detection result

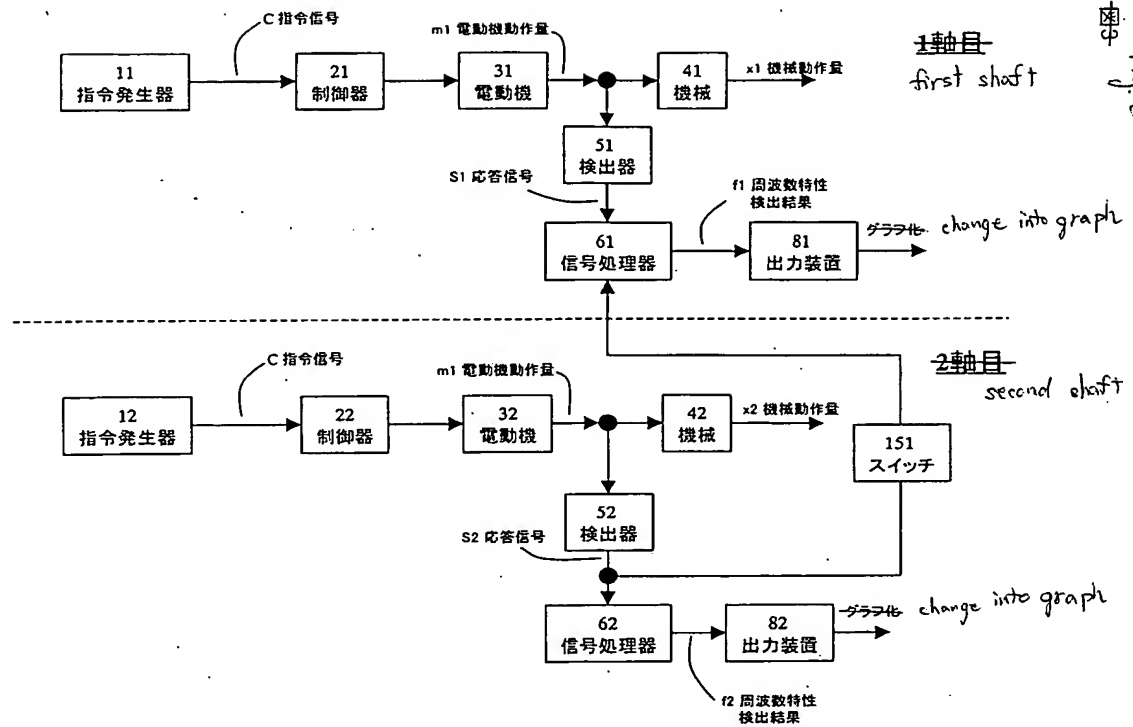


Fig. 3

- (11) command generator
- (12) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (81) output device
- (82) output device
- (151) switch
- (C) command signal
- (C) command signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) frequency characteristic detection result
- (f2) frequency characteristic detection result

Fig. 4

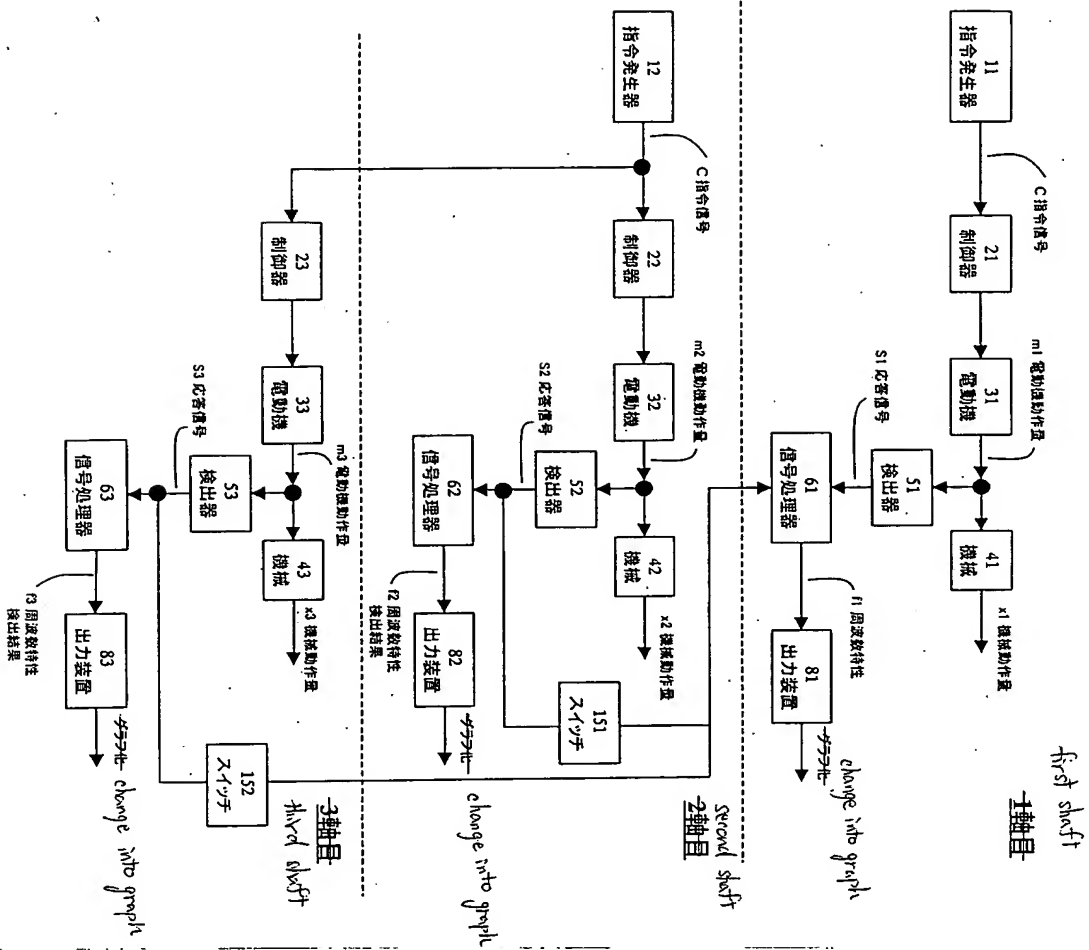
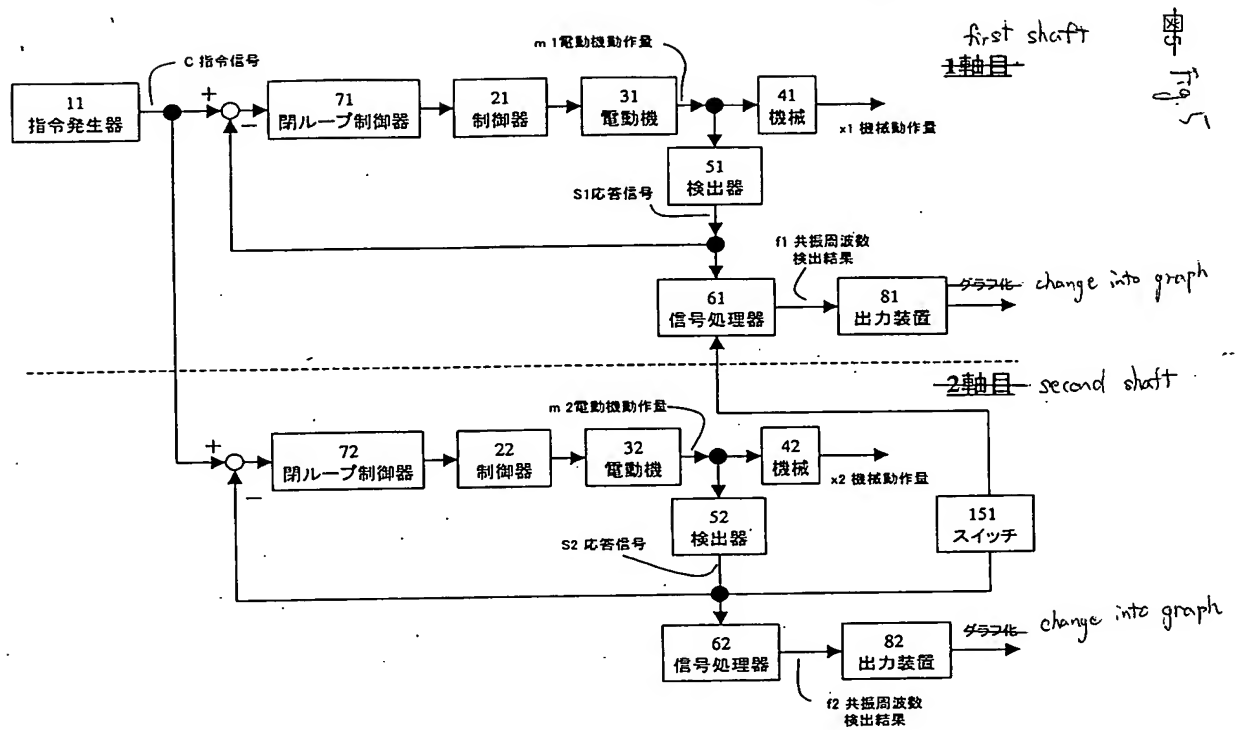


Fig. 4

- |       |                                 |
|-------|---------------------------------|
| (11)  | command generator               |
| (12)  | command generator               |
| (21)  | controller                      |
| (22)  | controller                      |
| (23)  | controller                      |
| (31)  | electric motor                  |
| (32)  | electric motor                  |
| (33)  | electric motor                  |
| (41)  | machine                         |
| (42)  | machine                         |
| (43)  | machine                         |
| (51)  | detector                        |
| (52)  | detector                        |
| (53)  | detector                        |
| (61)  | signal processor                |
| (62)  | signal processor                |
| (63)  | signal processor                |
| (81)  | output device                   |
| (82)  | output device                   |
| (83)  | output device                   |
| (151) | switch                          |
| (152) | switch                          |
| (C)   | command signal                  |
| (C)   | command signal                  |
| (m1)  | electric motor operating amount |
| (m2)  | electric motor operating amount |
| (m3)  | electric motor operating amount |
| (S1)  | response signal                 |
| (S2)  | response signal                 |
| (S3)  | response signal                 |
| (x1)  | machine operating amount        |
| (x2)  | machine operating amount        |
| (x3)  | machine operating amount        |
| (f1)  | frequency characteristic        |
| (f2)  | frequency characteristic        |
| (f3)  | frequency characteristic        |
| (d)   | detection result                |



- Fig. 5
- (11) command generator
  - (21) controller
  - (22) controller
  - (31) electric motor
  - (32) electric motor
  - (41) machine
  - (42) machine
  - (51) detector
  - (52) detector
  - (61) signal processor
  - (62) signal processor
  - (71) closed loop controller
  - (72) closed loop controller
  - (81) output device
  - (82) output device
  - (151) switch
  - (C) command signal
  - (m1) electric motor operating amount
  - (m2) electric motor operating amount
  - (s1) response signal
  - (s2) response signal
  - (x1) machine operating amount
  - (x2) machine operating amount
  - (f1) resonance frequency detection result
  - (f2) resonance frequency detection result

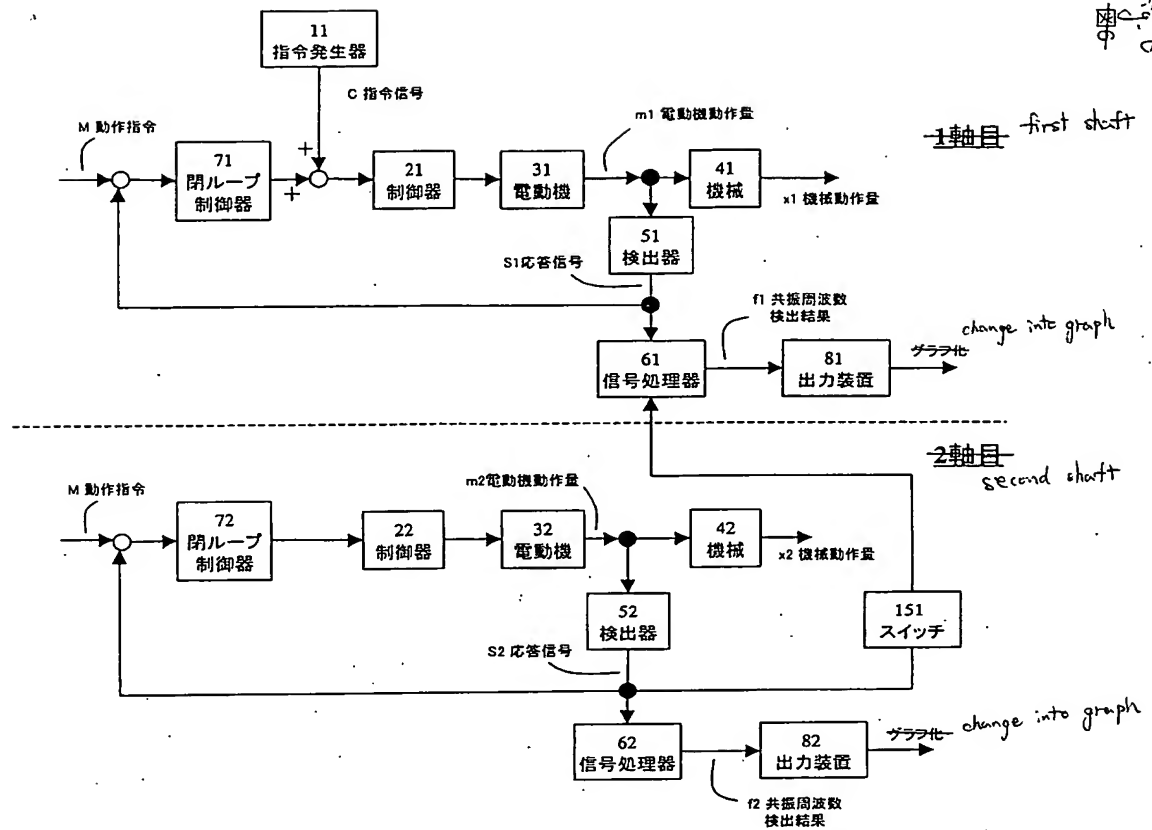
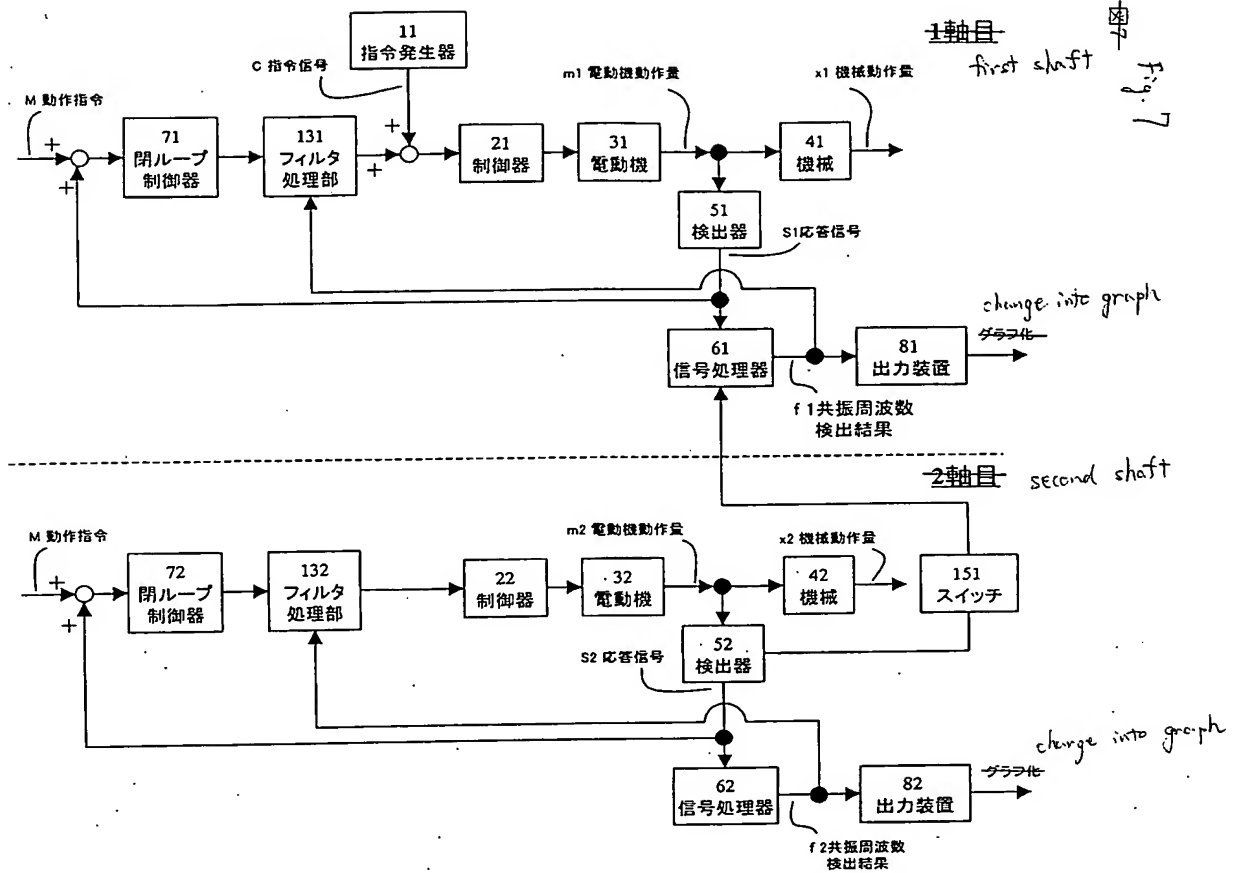


Fig. 6

- (11) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (71) closed loop controller
- (72) closed loop controller
- (81) output device
- (82) output device
- (151) switch
- (M) operation command
- (M) operation command
- (C) command signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) resonance frequency detection result
- (f2) resonance frequency detection result



- Fig. 7
- (11) command generator
  - (21) controller
  - (22) controller
  - (31) electric motor
  - (32) electric motor
  - (41) machine
  - (42) machine
  - (51) detector
  - (52) detector
  - (61) signal processor
  - (62) signal processor
  - (71) closed loop controller
  - (72) closed loop controller
  - (81) output device
  - (82) output device
  - (131) filter processing portion
  - (132) filter processing portion
  - (151) switch
  - (M) operation command
  - (M) operation command
  - (C) command signal
  - (m1) electric motor operating amount
  - (m2) electric motor operating amount
  - (S1) response signal
  - (S2) response signal
  - (x1) machine operating amount
  - (x2) machine operating amount
  - (f1) resonance frequency detection result
  - (f2) resonance frequency detection result

first shaft

1軸目

図8

Fig. 8

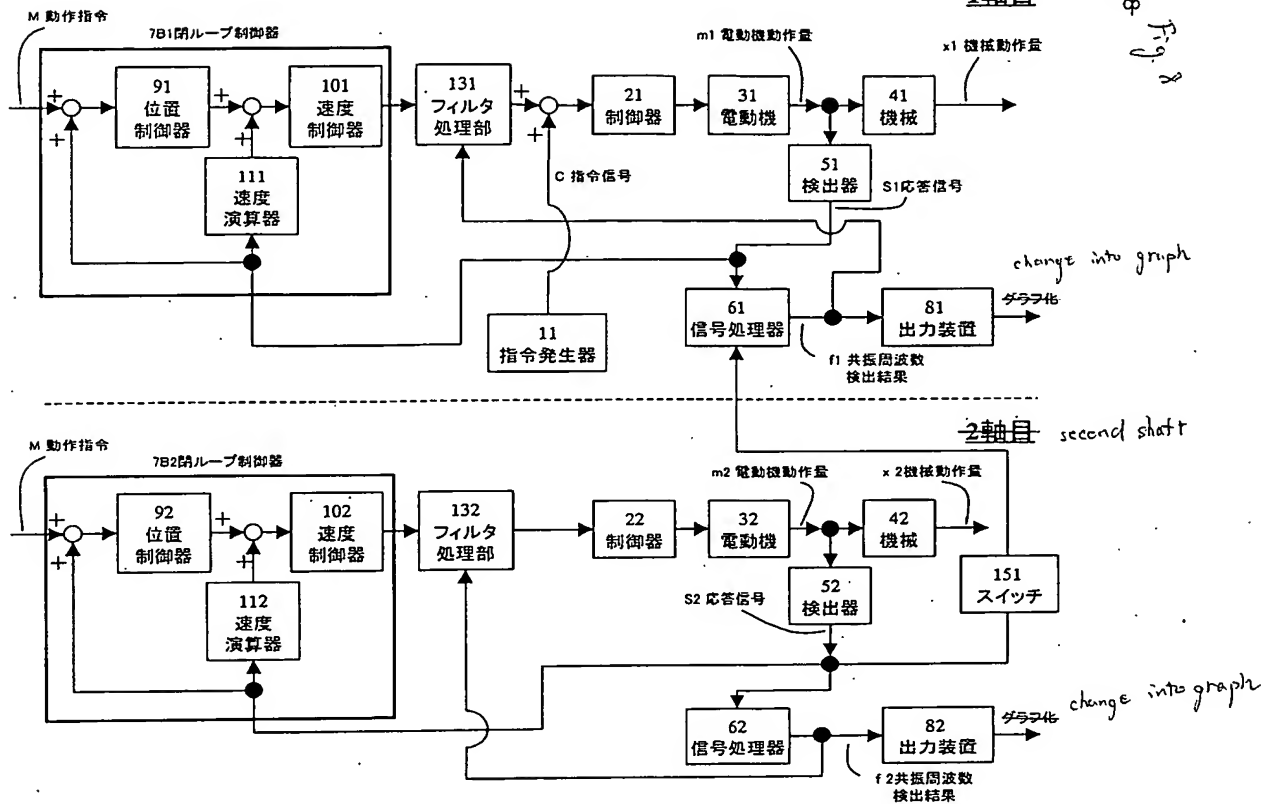


Fig. 8

- (11) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (81) output device
- (82) output device
- (91) position controller
- (92) position controller
- (101) speed controller
- (102) speed controller
- (111) speed calculator
- (112) speed calculator
- (131) filter processing portion
- (132) filter processing portion
- (151) switch
- (M) operation command
- (M) operation command
- (7B1) closed loop controller
- (7B2) closed loop controller
- (C) command signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) resonance frequency detection result
- (f2) resonance frequency detection result

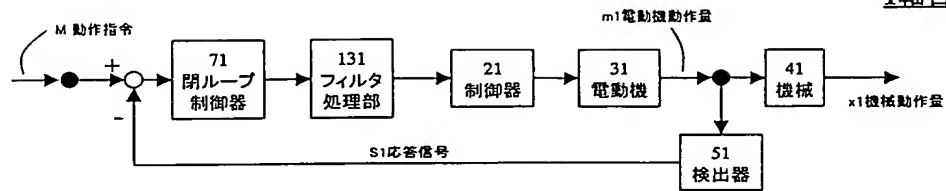


図

Fig. 1

first shaft

1軸目



2軸目

second shaft

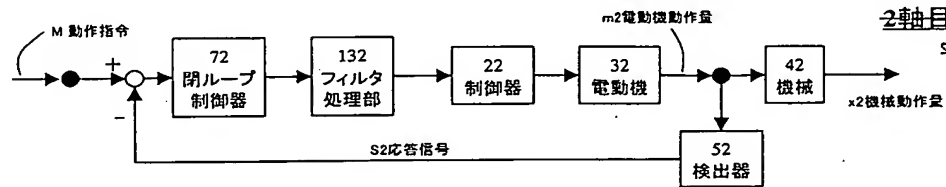


Fig. 9

- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (71) closed loop controller
- (72) closed loop controller
- (131) filter processing portion
- (132) filter processing portion
- (M) operation command
- (M) operation command
- (S1) response signal
- (S2) response signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (x1) machine operating amount
- (x2) machine operating amount

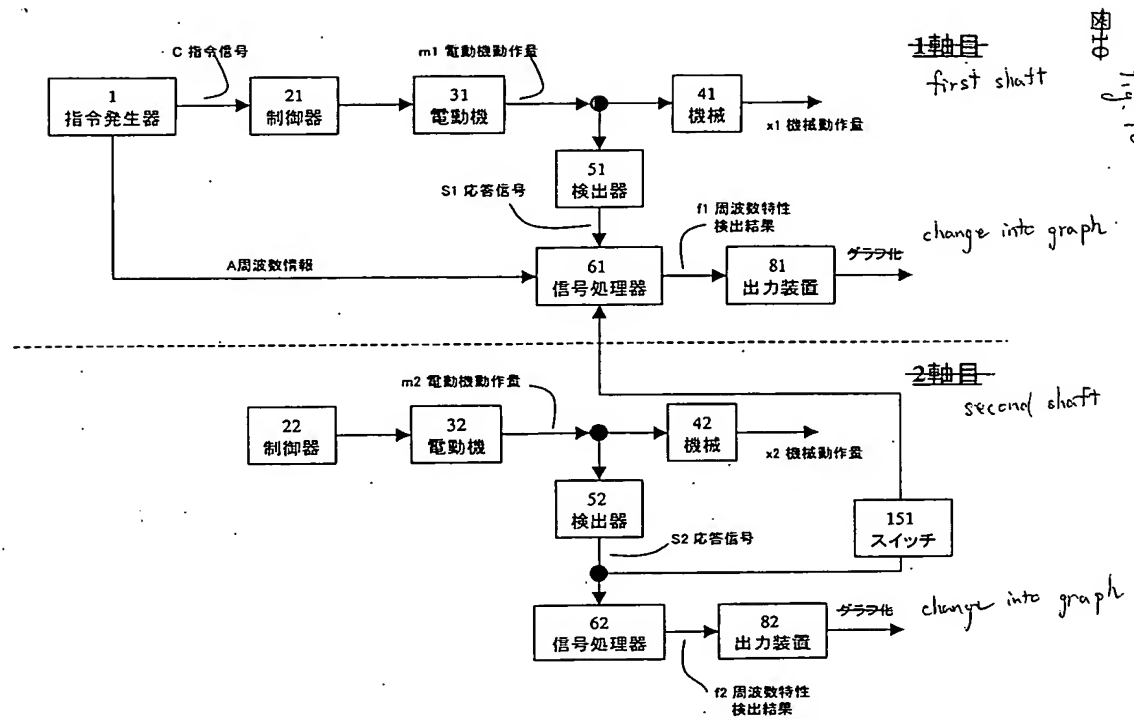


Fig. 10

- (1) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (81) output device
- (82) output device
- (151) switch
- (C) command signal
- (A) frequency information
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) frequency characteristic detection result
- (f2) frequency characteristic detection result
- Change into graph
- First shaft
- Second shaft

図11 Fig. 11

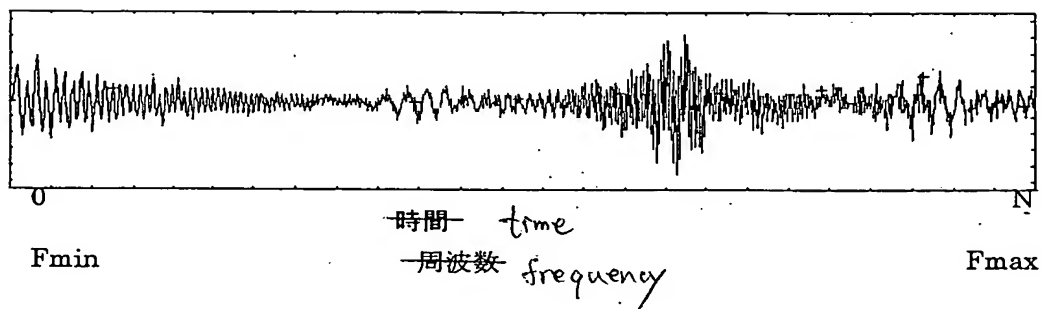
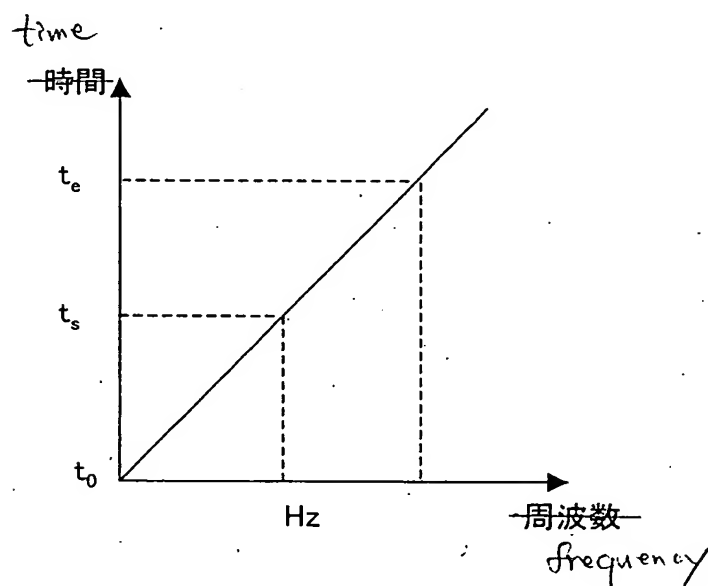


図12 Fig. 12



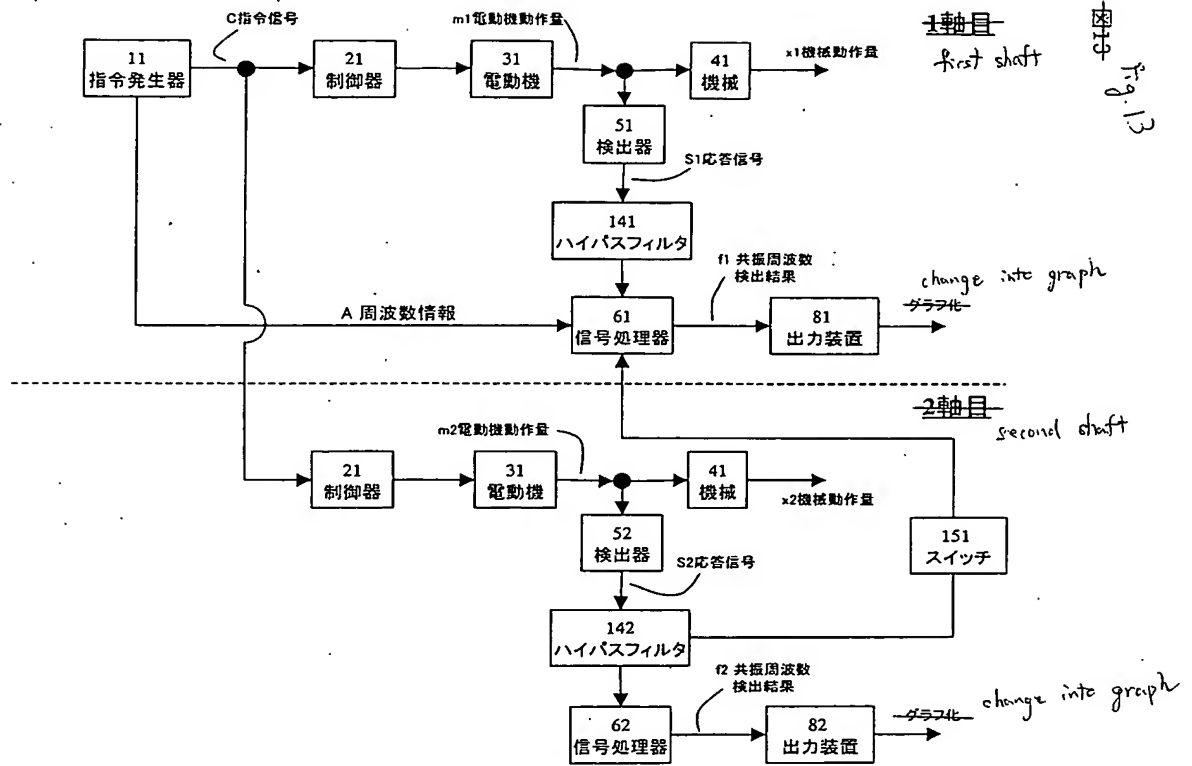


Fig. 13

- (11) command generator
- (21) controller
- (21) controller
- (31) electric motor
- (31) electric motor
- (41) machine
- (41) machine
- (51) detector
- (52) detector
- (61) signal processor
- (62) signal processor
- (81) output device
- (82) output device
- (141) high-pass filter
- (142) high-pass filter
- (151) switch
- (C) command signal
- (A) frequency information
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (x1) machine operating amount
- (x2) machine operating amount
- (f1) resonance frequency detection result
- (f2) resonance frequency detection result

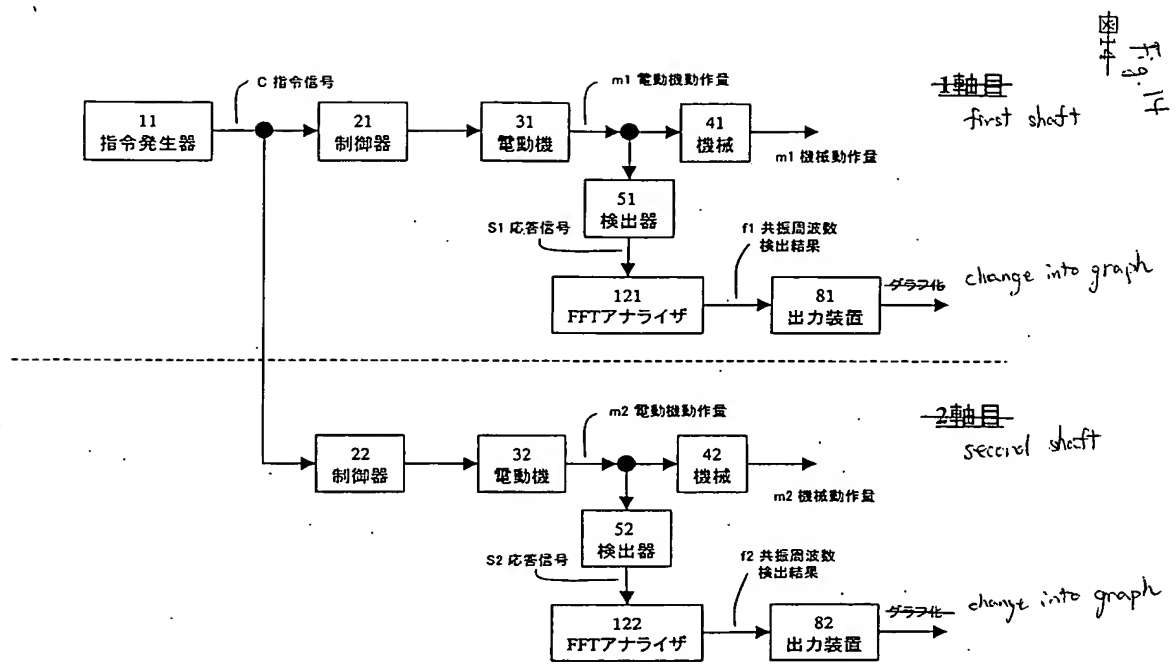


Fig. 14

- (11) command generator
- (21) controller
- (22) controller
- (31) electric motor
- (32) electric motor
- (41) machine
- (42) machine
- (51) detector
- (52) detector
- (81) output device
- (82) output device
- (121) FFT analyzer
- (122) FFT analyzer
- (C) command signal
- (m1) electric motor operating amount
- (m2) electric motor operating amount
- (S1) response signal
- (S2) response signal
- (m1) machine operating amount
- (m2) machine operating amount
- (f1) resonance frequency detection result
- (f2) resonance frequency detection result

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